UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,998	11/14/2003	Chikara Tsutsui	018775-882	7357

21839 7590 04/12/2005

BURNS DOANE SWECKER & MATHIS L L P
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
DOTE, JANIS L	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 04/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/706,998	TSUTSUI ET AL.	
	Examiner	Art Unit	
	Janis L. Dote	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6-9,11 and 21-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6-9,11 and 21-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The examiner acknowledges the cancellation of claims 3-5, 10, and 12-20, the amendment to claim 1, and the addition of claims 21-33, set forth in the amendment filed on Feb. 23, 2005. Claims 1, 2, 6-9, 11, and 21-33 are pending.

2. Applicants' election without traverse of the invention of Group I, which includes instant claims 1, 2, 6-9, 11, and 21-33, in the reply filed on Feb. 23, 2005, is acknowledged. The non-elected claims 12-20 were cancelled by the amendment filed on Feb. 23, 2005.

3. The objections to the specification set forth in the office action mailed on Nov. 26, 2004, paragraph 5, have been withdrawn in response to the amended paragraphs filed on Feb. 23, 2005, numbered 0003, 0005, and 0025, of the specification, and the amended Tables 3 and 5-7 filed on Feb. 23, 2005.

The rejection of claims 3-5 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on Nov. 26, 2004, paragraph 9, has been mooted by the cancellation of claims 3-5 set forth in the amendment filed on Feb. 23, 2005.

The rejection of claims 1-11 under 35 U.S.C. 103(a) over US 6,603,535 (Tsutsui) combined with US 6,338,929 B1 (Hagi), set forth in the office action mailed on Nov. 26, 2004,

paragraph 13, has been withdrawn in response to the amendment filed on Feb. 23, 2005, to claim 1, adding the limitation that the fatty acid metal salt is externally added to the toner in the amount of 0.005 to 0.015 % by weight. As noted by applicants in the response filed on Feb. 23, 2005, page 14, lines 12-18, neither Tsutsui nor Hagi teaches or suggests externally adding a fatty acid metal salt in the amount recited in instant claim 1.

4. The examiner notes that the term "average degree of roundness" recited in instant claim 1 is defined in the instant specification at pages 21-22, paragraphs 0049-0050, as the average value of values calculated by the following equation: "average [sic] degree of roundness = peripheral length of a circle equal to projection area of a particle/peripheral length of a particle projection image."

5. In light of the disclosure in the instant specification, the limitation "toner . . . having surface properties D/d_{50} that satisfy the following conditional expression . . . $D/d_{50} \geq 0.40$ in which $D = 6/(\rho \cdot S)$, (ρ is a true density (g/cm^3) of toner particles, S is a BET specific surface area (m^2/g) of toner particles), and d_{50} represents a weight-average particle

size (μm) of the toner particles" is interpreted by the examiner to refer to the surface properties D, ρ, and S of the toner particles prior to the addition of the fatty acid metal. Antecedent basis for the examiner's definition is found at page 23, paragraph 0052, and in the examples, of the specification. The specification in paragraph 0052 discloses that the parameter D/d_{50} is an "index indicating whether or not thin pores exist on the surface or the inside of the toner particle." In the examples of the instant specification, calcium stearate is added to each of the toner particles. See the instant specification, page 79, paragraph 0195. In Table 3, in comparative example A11, the toner, which comprises toner particles A1 and no externally added calcium stearate, has a D/d_{50} value of 0.55. In example A1, the toner, which comprises toner particles A1 and externally added calcium stearate, has the same D/d_{50} value of 0.55.

In the response filed on Feb. 23, 2005, applicants did not comment on the examiner's definition, and they are deemed to have waived further argument on the definition.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 32 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 32 and 33 are indefinite in the phrase "[t]he developer of claim 30" for lack of unambiguous antecedent basis in claim 30, from which claims 32 and 33 depend. Claim 30 recites a toner, not a developer.

Claim 33 is further indefinite in the phrases "a first binder resin" and "a second binder resin" (emphasis added) because it is not clear whether "a first binder resin" and "a second binder resin" recited in instant claim 33 refer to the first binder resin and second binder resin recited in instant claim 30 or to other binder resins.

8. Applicants are advised that should claim 11 be found allowable, claim 31 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in

wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). The term "mono-component developer" does not distinguish claim 31 from claim 11.

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. In the interest of compact prosecution, the examiner has interpreted the recitation in claim 33 as referring to the first binder resin and the second binder resin recited in instant claim 30. Rejections based on this interpretation are set forth infra.

11. Claims 1, 2, 6-9, 11, 21-28, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,603,535 (Tsutsui) combined with US 6,399,264 B1 (Ogata), as evidenced by the 1994-1995 Aldrich Catalog Handbook of Fine Chemicals, page 1280, and US 4,647,328 (Rhee).

Tsutsui discloses a mono-component developer comprising a non-magnetic toner. Example 1 at col. 26. The non-magnetic toner comprises toner particles that comprise a colorant and polyester binder resin A. Polyester resin A has a number-

average molecular weight (Mn) of 3,300, a ratio of weight-average molecular weight (Mw) to Mn (Mw/Mn) of 4.2, a glass transition temperature (Tg) of 68.5°C, and a softening point of 110.3°C. Table 1 at col. 24, polyester resin A. Polyester resin A meets the binder resin limitations recited in instant claims 6 and 7. The toner particles have a weight average particle size of 7.0 μm, a degree of roundness of 0.981, a standard deviation of the degree of roundness of 0.026, and a value for the ratio D/d_{50} of 0.54. Table 2 at col. 29, example 1. The average degree of roundness disclosed by Tsutsui has the same definition as the average degree of roundness recited in instant claims 1 and 31. Compare Tsutsui, col. 3, lines 25-34, and paragraph 4, supra. The Tsutsui values of the average degree of roundness and the standard deviation of the average degree of roundness are within the ranges of the average roundness parameters recited in instant claims 1, 24, 25, 27, and 31. The Tsutsui value of the ratio D/d_{50} 0.54 meets the ranges of D/d_{50} recited in instant claims 1, 26, 28, and 31. Tsutsui further discloses externally adding post-treatment agents, such as hydrophobic silica, to 100 parts of the toner particles of example 1. Col. 29, lines 55-62.

Tsutsui does not disclose that the toner particles of example 1 have a volume average particle size of 3 to 7 μm as

recited in instant claims 1 and 31. However, as discussed above the toner particles in example 1 of Tsutsui have a weight-average particle size of 7.0 μm. The particle size value of 7.0 μm is within the numerical range of the volume average particle size recited in instant claims 1 and 31. Thus, based on the presumption, which appears to be consistent with all facts of record, that toner particles have uniform density, it would be reasonable to conclude that the toner particles in example 1 of Tsutsui have a volume average particle size of 7.0 μm. Accordingly, the burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Instant claims 8 and 9 are written in product-by-process format. Tsutsui does not disclose that its toner is obtained by a wet method as recited in instant claims 8 and 9. However, as discussed supra, the toner particles in example 1 of Tsutsui have an average degree of roundness, a standard deviation of the degree of roundness, a ratio D/d_{50}, and a volume average particle size that are within the ranges of the roundness parameters, the ratio D/d_{50}, and volume average particle size recited in instant claim 1, from which claims 8 and 9 depend. Furthermore, in example 1 of Tsutsui, after forming the toner particles, the particles are subjected to an "instantaneous" heat treatment by applying heat to the particles in a hot air flow as recited in

instant claim 9. See Tsutsui, example 1, col. 26, lines 19-31 and 35-48. Thus, it appears that the toner particles in example 1 of Tsutsui are the same or substantially the same as the toner particles made by the process limitations recited in instant claims 8 and 9. The burden is on applicants to prove otherwise. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983) and In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985). MPEP 2113.

Tsutsui does not exemplify toners comprising an externally added fatty acid metal salt having a volume average particle size of 1.5 to 12 μm in the amount of 0.005 to 0.015% by weight as recited in instant claims 1 and 31. However, as discussed supra, Tsutsui discloses externally adding post-treatment agents to the toner particles of example 1 of Tsutsui. Tsutsui does not limit the type of post-treatment agents used. Tsutsui discloses "externally admixing post-treating agents such as a fluidizing agent etc. to the toner particles obtained as described above. With respect to the post-treatment agents, inorganic fine particles or organic fine particles may be used." Col. 17, lines 1-5. Tsutsui previously discloses that fluidity-adjusting agents can include various metal soaps such as aluminum stearate, calcium stearate, zinc stearate, and magnesium stearate. Col. 9, lines 63-64.

Ogata teaches toners comprising toner particles and a

combination of three particular external additives. The combination of external additives comprises: (1) positively charged hydrophobic silica particles; (2) negatively charged hydrophobic silica particles; and (3) a lubricant comprising a mixture of 56% by weight zinc stearate, 40% by weight zinc palmitate, and 2% by weight zinc myristate. Col. 4, lines 24-27; col. 7, lines 45-48; and col. 11, lines 8-11 and 15-17. The lubricant comprising zinc stearate, zinc palmitate, and zinc myristate has a volume average particle size Ds50 ranging from 2 to 5 μm. Col. 9, lines 39-41, and col. 11, lines 17-19. The mixture of zinc stearate, zinc palmitate, and zinc myristate meets the limitations of the fatty acid metal salt compositional limitations and particle size limitations recited in instant claims 1, 21, 23, and 31.

Ogata does not disclose that the melting points of the zinc fatty acid salts. However, the melting point of zinc stearate and zinc palmitate are 128-130°C and about 100°C, respectively. See the Aldrich Catalog Handbook, page 1280, and Rhee, col. 11, line 1. The melting points of zinc stearate and zinc palmitate are within the range of 100 to 150°C recited in instant claim 22. As discussed above, the lubricant comprises a mixture comprising 56% by weight zinc stearate, 40% by weight zinc palmitate, and 2% by weight zinc myristate. Because the lubricant comprises a

small amount of zinc myristate, and because zinc stearate and zinc palmitate have melting points within the range of 100 to 150°C, it is reasonable to presume that the melting point of the Ogata lubricant has a melting point that is within the range of 100 to 150°C recited in instant claim 22. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Ogata further teaches that the mixture of fatty acid metal salts can equally be a mixture of fatty acid salts of calcium, i.e., calcium stearate, calcium palmitate, and calcium myristate, which meets the fatty acid metal salt compositional limitation recited in instant claim 2. Col. 9, lines 30-36, and 53-54.

Ogata does not exemplify using the lubricant of fatty acid metal salts in the amount of 0.005 to 0.015 % by weight, as recited in instant claims 1 and 31. However, Ogata teaches that the lubricant is preferably present in the amount of about 0.01 to 2.0 parts by weight, based on 100 parts by weight of the toner particles. Col. 10, lines 1-4. The lower limit, 0.01 parts by weight, of the Ogata preferred amount range of 0.01 to 2 parts by weight, based on 100 parts by weight of the toner particles, is within the range of 0.005 to 0.015 wt% recited in instant claims 1 and 31. The Ogata preferred amount range overlaps the range recited in instant claims 1 and 31.

According to Ogata, when a toner comprises such a combination of the Ogata external additives, the toner provides stable high quality clear images with high image density without ghost images or background during long term use. Col. 4, lines 10-17 and 57-59. The toner is also capable of stable long-term performance without any undesired toner contamination of the electrophotographic system including the photoconductor and the direct photoconductor charging apparatus. Col. 4, lines 17-22.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Tsutsui and Ogata, to use the combination of the three particular external additives disclosed by Ogata, where the amount of the lubricant comprising the fatty acid metal salts is within the amount range of 0.005 to 0.015 wt% of the toner, such as 0.01 part by weight per 100 parts by weight of toner particles, as the externally added post-treatment agent to the toner particles in example 1 of Tsutsui. That person would have had a reasonable expectation of successfully obtaining a non-magnetic mono-component developer comprising a non-magnetic toner that provides stable high quality clear images with high image density without ghost images or background during long term use without any

undesirable toner contamination of the electrophotographic system, as disclosed by Ogata.

12. Claims 29, 30, 32, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsui combined with Ogata, as evidenced by as evidenced by the 1994-1995 Aldrich Catalog Handbook of Fine Chemicals, page 1280, and Rhee, as applied to claims 1 and 31 above, further combined with additional teachings in Tsutsui.

Tsutsui combined with Ogata, as evidenced by the 1994-1995 Aldrich Catalog Handbook, page 1280, and Rhee, renders obvious a non-magnetic mono-component developer as described in paragraph 11 above, which is incorporated herein by reference. For the reasons discussed in paragraph 11 above, the Tsutsui average degree of roundness, the standard deviation of the degree of roundness, and the D/d_{50} value are within the ranges of the average degree of roundness parameters and the range of D/d50 recited in instant claim 32. For the reasons discussed in paragraph 11 above, the volume average particle sizes of the fatty acid metal salts in the Ogata lubricant are within the volume average particle size range recited in instant claim 32.

The toner particles in example 1 of Tsutsui do not comprise a binder resin as recited in instant claims 29, 30, 32, and 33.

However, Tsutsui discloses that "in order to improve the fixing properties for oil-less fixing toners as well as improving the anti-offset properties, or in order to control the gloss properties for images in full-color toners requiring light transmitting properties, it is preferable to use two kinds of binder resins having different softening points." Col. 6, lines 30-36. Tsutsui teaches that for oil-less toners, the first binder resin having a softening point of 80 to 125°C is used to improve the fixing properties and a second binder resin having a softening point of 125 to 160°C is used to improve the anti-offset properties. Col. 6, lines 36-40. According to Tsutsui, the weight ratio of the first binder resin to the second binder resin is set at 7:3 to 2:8 to "provide a superior dot-reproducibility with less toner's expansion due to crushing at the time of fixing and a superior low-temperature fixing properties." Col. 62, lines 62-67. Tsutsui exemplifies a binder resin comprising 40 parts by weight polyester resin D having a softening point of 110°C and 60 parts by weight of polyester resin E having a softening point of 150°C. Col. 25, lines 36 and 57, and col. 27, lines 5-7. The Tsutsui binder resin comprising the two binder resins having different softening points meets the binder resin limitations recited in instant claims 29, 30, 32, and 33.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Tsutsui, to use the binder resin comprising the two binder resins having different softening points as taught by Tsutsui as the binder resin in the toner particles in example 1 of Tsutsui in the non-magnetic mono-component developer rendered obvious over the combined teachings of Tsutsui and Ogata, as evidenced by the 1994-1995 Aldrich Catalog Handbook, page 1280, and Rhee. That person would have had a reasonable expectation of successfully obtaining a non-magnetic mono-component developer that can be fixed in an oil-less system and that has improved fixing properties and anti-offset properties, and that provides images with superior dot-reproducibility, as disclosed by Tsutsui.

13. Applicant's arguments filed on Feb. 23, 2005, have been fully considered but they do not apply to the new rejections set forth in paragraphs 11 and 12 above.

Applicants assert that "there is no disclosure in Tsutsui which would motivate those skilled in the art to select metallic stearates as opposed to any of the other fluidity-adjusting agent disclosed therein." Applicants also assert that "Tsutsui does not disclose or suggest toners containing an externally

added fatty acid metal in an amount of 0.005 to 0.015% by weight" as recited in instant claims 1 and 31.

However, in the new rejections set forth in paragraphs 11 and 12 above, the examiner relies on Ogata for reason, suggestion, and motivation to use metallic fatty acid salts as externally added post-treating agents in amounts that are within the range of 0.005 to 0.015 wt% of the toner, as required by the instant claims. The combination of the particular external post-treating agents taught by Ogata with the toner particles taught by Tsutsui is proper because Tsutsui teaches that external post-treating agents can be added to the Tsutsui toner particles. Accordingly, the combined teachings of the references render obvious the instantly claimed toner and mono-component developer.

14. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened

statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD
Apr. 9, 2005

Janis L. Dote
JANIS L. DOTE
PRIMARY EXAMINER
GROUP ~~1500~~ 1700